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Comparison of Three Phenotypic and Genotypic Methods for Detection of Methicillin Resistant Staphylococcus aureus (MRSA)

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Background & Objective: Today treatment of infections caused by Methicillin resistant *S. aureus* strains (MRSA) is a major therapeutic challenge. Infections caused by MRSA strains are associated with higher mortality and morbidity. These facts emphasize the need for a reliable, rapid and accurate test for detection of MRSA strains. This study was aimed to compare the phenotypic and genotypic methods in detection of MRSA strains.

Method: A total of 41 clinical *Staphylococcus aureus* isolates from teaching hospitals affiliated to Ardabil University of Medical Sciences were included. The oxacillin resistance were evaluated using three category of methods: Disk diffusion (oxacillin 1µg, methicillin 10 µg, cefoxitin 30 µg), Agar dilution (determination of oxacillin MIC), and PCR (detection of mecA gene).

Results: Of the 41 isolate, 17, 14, 19 and 19 found to be MRSA by oxacillin, methicillin cefoxitin disks and MIC method respectively. PCR revealed mecA gene in all isolates determined as MRSA in phenotypic methods. Considering PCR as gold standard, sensitivity and specificity of conventional methods were as follow: 89.74% and 100% for oxacillin, 73.68% and 100% for methicillin, 100% and 100% for cefoxitin and 100% and 100% for MIC method.

Conclusion: According to the results of this study in laboratories with limited facilities cefoxitin disk is recommended to accurate, reliable and rapid method to detection of oxacillin resistance.

Key words: MRSA; Disk Diffusion; MIC; mecA